

**Remarks**

The Final Office Action mailed 25 March 2003 has been received and reviewed. Claims 1-3, 5, 10-13, 15, and 21 having been amended, claim 22 having been cancelled, and claim 23 having been added, the pending claims are claims 1-21 and 23.

The specification has been amended simply to correct the spelling of the colorant Thionin.

Claims 1 and 10 have been amended to remove the language, "wherein the indicator composition does not include a halogen source." Also, claims 1-3, 10, and 21 have been amended to remove the colorants Malachite green oxalate and Methyl violet 2B; claims 1 and 10 have been amended to remove the colorant Crystal violet; claims 1-3, 5, 10, and 21 have been amended to remove the colorant Thionine; and claims 1, 5, 10, and 21 have been amended to remove the colorant Methylene green.

Claim 11 has been amended to recite a method including exposing an article to be sterilized and a hydrogen peroxide sterilization indicator to a sterilant vapor consisting essentially of hydrogen peroxide. Support for this amendment is found in the specification at, for example, page 3, lines 22-23. Additionally, claim 11 has been amended to recite the colorants that were incorporated by dependency from claim 1.

*NO new matter*

Claims 12, 13, and 15 have been amended to correct the spelling of the colorant Thionin, and Claim 21 has been further amended to correct a typographical error.

Claim 23 has been added to recite a hydrogen peroxide sterilization indicator including a substrate and an indicator composition disposed thereon, wherein the indicator composition consists essentially of a binder, an optional colorant that does not change color upon contact with hydrogen peroxide, an optional dispersing agent, an optional opacifying agent, an optional surfactant, an optional plasticizer, an optional antifoam agent, an optional basic material, and at least one of the group of colorants recited. Support for this claim is found in the specification at, for example, page 2, lines 3-16, page 3, lines 27-29, and page 7, lines 6-24.

*NO new matter*

Claim 22 has been cancelled.

Serial No.: 09/453,726

Filed: 2 December 1999

For: HYDROGEN PEROXIDE INDICATOR AND METHOD

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No new matter has been added as a result of these amendments.

Reconsideration and withdrawal of the rejections, in view of the above amendments and the following comments, are respectfully requested.

### **The 35 U.S.C. §112, First Paragraph, Rejection**

The Examiner rejected claims 1 and 10 under 35 U.S.C. §112, first paragraph, as ✓ containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Specifically, in claims 1 and 10, Applicant included the language "wherein the indicator composition does not include a halogen source." The Examiner alleges that this language was not disclosed in the originally filed application.

While Applicant disagrees with the Examiner, Applicant has, in the interest of advancing prosecution of the application, amended claims 1 and 10 to remove the previously added language. Applicant submits, therefore, that the Examiner's rejection is rendered moot by this amendment and reconsideration and withdrawal of the rejection is respectfully requested.

### **The 35 U.S.C. §102 Rejection**

The Examiner rejected claims 1-3, 5-6, 9-13, 15-16, and 19-22 under 35 U.S.C. §102(e) as being anticipated by Ignacio et al. (U.S. Patent No. 6,287,518). Applicant respectfully traverses this rejection.

Claim 22 having been cancelled renders the rejection as to this claim moot. ✓

Claims 1-3, 10, and 21 have been amended to exclude the colorant Malachite green oxalate, and claims 1-3, 5, 10, and 21 have been amended to exclude the colorant Thionine. Applicant respectfully submits that claims 1-3, 5-6, 9-10, and 21, as amended, reciting hydrogen peroxide sterilization indicators, are novel over Ignacio et al.

Furthermore, Applicant submits that Ignacio et al. fail to disclose a method of monitoring a hydrogen peroxide sterilization process, including exposing an article to be sterilized and a hydrogen peroxide sterilization indicator to a sterilant vapor consisting essentially of hydrogen

*with regard to claim 1, Ignacio's monitor is a pH monitor, H<sub>2</sub>O<sub>2</sub> sterilization cycles*

*new limitation*

peroxide, as recited in Applicant's claim 11, as amended. Ignacio et al. disclose a peracid sterilization process wherein "the sterilization process may include use of other sterilants (e.g., hydrogen peroxide) in addition to a peracid or may include a plasma step that may, for example, involve a peracid" (Ignacio et al., column 5, lines 53-56, emphasis added). Applicant submits, therefore, that claim 11, and claims 12-20 dependent therefrom, are also novel over Ignacio et al.

Reconsideration and withdrawal of the rejection of claims 1-3, 5-6, 9-13, 15-16, and 19-22 under 35 U.S.C. §102(e) is respectfully requested.

### **The 35 U.S.C. §103 Rejection**

#### **Claims 4 and 14**

The Examiner rejected claims 4 and 14 under 35 U.S.C. §103(a) as being unpatentable over Ignacio et al. (U.S. Patent No. 6,287,518) in view of Malchesky et al. (U.S. Patent No. 5,518,927). Applicant respectfully traverses this rejection. Also, Applicant points out that as claims 1 and 11 include the colorants referred to by the Examiner in claims 4 and 14, the following comments are also applicable to claims 1 and 11.

Applicant's claims include indicator compositions that may include Methylene violet (Color Index number (C.I.) 52041). Applicant respectfully submits that safranine, which may also be spelled safrinin, disclosed in Malchesky et al. is not synonymous with methylene violet. Safrinin is a diazine dye that is synonymous with methylene violet RR (C.I. 52041). Methylene violet RR is not recited in Applicant's claims. Applicant's claims include Methylene violet (C.I. 52041), which is a thiazine dye and is structurally different from safrinin. As Applicant's claims include Methylene violet, not Methylene violet RR, and as the two dyes are structurally different, it is respectfully submitted that one skilled in the art would understand the claims to include Methylene violet and not Methylene violet RR.

Furthermore, with respect to method claim 14, Applicant respectfully submits that the combination of Ignacio et al. with Malchesky et al. fails to teach Applicant's invention. Ignacio et al., for the reasons discussed above, fail to teach a method of monitoring a hydrogen peroxide sterilization process including a sterilant vapor consisting essentially of hydrogen peroxide. In

Applicant's claims still refer to methylene violet and safrinin is one of the chemical names for m.v.

↑  
New definition  
in claim 11

Serial No.: 09/453,726

Filed: 2 December 1999

For: HYDROGEN PEROXIDE INDICATOR AND METHOD

addition, while Malchesky et al. disclose the use of liquid and gaseous fluids, including hypochlorite solutions, ethylene oxide gas, and the like (column 3, lines 30-32), Malchesky et al. fail to teach or suggest a method of monitoring a hydrogen peroxide sterilization process including exposing an article to be sterilized and a hydrogen peroxide sterilization indicator to a sterilant vapor consisting essentially of hydrogen peroxide, and wherein the indicator

composition includes a colorant selected from the group of Toluidine blue O, Luxol brilliant green BL, Victoria green S extra, Methylene violet, Bromopyrogallol red, Brilliant green, and combinations thereof. Applicant asserts, therefore, that the combination of Ignacio et al. and Malchesky et al. fails to disclose Applicant's claims as amended.

#### Claims 7 and 17

The Examiner rejected claims 7 and 17 under 35 U.S.C. §103(a) as being unpatentable over Ignacio et al. (U.S. Patent No. 6,287,518) in view of Bealing et al. (U.S. Patent No. 5,990,199). Applicant respectfully traverses this rejection.

Claims 7 and 17 of the present invention recite the use of Janus green B as a colorant that does not change color upon contact with hydrogen peroxide. Conversely, Bealing et al. disclose indicator compositions wherein the colorants "provide a visible and preferably permanent color change when exposed to the conditions of sterilization" (column 6, lines 10-13). Janus green B is disclosed as a suitable reactive dye of Bealing et al. (column 6, line 23-26), reactive dyes being among the types of dyes that provide to the indicators of Bealing et al. a visible color change (column 6, lines 10-27).

The Examiner indicated in the present Office Action at page 7, lines 8-10 that "Janus green B is a component disclosed in both the claims and Bealing et al., such that, they teach a dual function of such a component (i.e., Janus green B is capable of changing or not changing color)." Applicant does not understand this statement, nor can Applicant find where in Bealing et al. that such a statement is made. There is no teaching or suggestion in Bealing et al. that Janus green B does not change color upon contact with hydrogen peroxide.

*How is well known  
sterilant and  
Malchesky no teaches  
using any type of  
sterilant*

*New  
limitation*

Serial No.: 09/453,726

Filed: 2 December 1999

For: HYDROGEN PEROXIDE INDICATOR AND METHOD

Examples 2-4 of Bealing et al. use Janus green B in the compositions. First, these examples include the use of a steam sterilization process, not a hydrogen peroxide sterilization process. Furthermore, each of the compositions of Examples 2-4 changed color upon exposure to a steam sterilization process. The compositions of Example 2 changed color after exposure to saturated steam for a length of 45 minutes (column 10, lines 58-62) and indicators of Example 3 changed color after exposure to dry saturated steam for not more than 10 minutes (column 11, lines 12-17). The indicators of Example 4 also changed color (column 11, lines 27-53). Bealing et al. disclose that adjusting the concentration of polyamide curing agent affects the sensitivity of the indicator composition (column 7, lines 5-10). It does not teach or suggest that Janus green B does not change color.

→ Bealing et al.  
indicator can be used  
to monitor  
H<sub>2</sub>O<sub>2</sub>

Applicant submits that as all indicators of Examples 2-4, which include Janus green B, did change color, and that none of Examples 2-4 include a hydrogen peroxide sterilization process, Bealing et al. fail to teach or suggest that Janus green B does not change color upon contact with hydrogen peroxide vapor.

Applicant asserts that the combination of Ignacio et al. with Bealing et al. not only fails to teach or suggest the present claims as amended, but also, as there is no teaching or suggestion that Janus green B does not change color when exposed to hydrogen peroxide, the combination teaches away from Applicant's claims.

#### Claims 8 and 18

The Examiner rejected claims 8 and 18 under 35 U.S.C. §103(a) as being unpatentable over Ignacio et al. (U.S. Patent No. 6,287,518) in view of Bealing et al. (U.S. Patent No. 5,990,199), and further in view of Barrett (U.S. Patent No. 5,955,025). Applicant respectfully traverses this rejection.

Ignacio et al. fail to teach or suggest a composition including Alkali blue 6B and Quinacridone red 19. Bealing et al. do not disclose the use of Quinacridone red 19 or Alkali Blue 6B, also known as Acid blue #119. Bealing et al. disclose the use of Acid Blue #7 and Acid Blue #20 (column 6, lines 36-38). Acid Blue #7 has a CI 42080 and a CAS Registry No. 3486-

Serial No.: 09/453,726

Filed: 2 December 1999

For: HYDROGEN PEROXIDE INDICATOR AND METHOD

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30-4 (Exhibit A). Acid Blue #20 has a CI 50405 and a CAS Registry No. 8004-99-7 (Exhibit A).

Alkali blue 6B has a CI 42750 (specification, Table, page 14, run 18, column 4) and a CAS Registry No. 1324-76-1 (Exhibit B). Each of the colorants Acid blue#7, Acid blue #20, and Acid blue #119 includes the phrase "Acid blue;" however, there is no teaching or suggestion that each colorant has the same structure or that one colorant may be successfully substituted for another.

For example, the molecular formula of Alkali blue 6B is  $C_{37}H_{29}N_3O_3S$  (Exhibit B), but the molecular formula of Acid Blue 7 is  $C_{37}H_{35}N_2O_6S_2Na$  (Exhibit C; page 56 of the Aldrich Chemical Company Handbook of Fine Chemicals and Laboratory Equipment, 2003-2004, wherein Acid Blue #7 is listed as Alphazurine A). There is no teaching or suggestion provided that Alkali blue 6B may successfully be substituted for either Acid Blue #7 or Acid Blue #20.

As Barrett also does not teach or suggest an indicator composition including Alkali blue 6B, Applicant asserts that Barrett fails to add that which is missing from Ignacio et al. and Bealing et al.

For the reasons stated above, Applicant submits that neither the combination of Ignacio et al. and Malchesky et al., Ignacio et al. and Bealing et al., or Ignacio et al., Bealing et al., and Barrett teach or suggest Applicant's claims as amended. Reconsideration and withdrawal of the rejections are, therefore, respectfully requested.

### The New Claim

*New limitations*

Claim 23 has been added to recite a hydrogen peroxide sterilization indicator including a substrate and an indicator composition disposed thereon, wherein the indicator composition consists essentially of a binder, an optional colorant that does not change color upon contact with hydrogen peroxide, an optional dispersing agent, an optional opacifying agent, an optional surfactant, an optional plasticizer, an optional antifoam agent, an optional basic material, and at least one colorant selected from the group consisting of Malachite green oxalate, Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, Thionin, Meldolas

blue, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, Bromopyrogallol red, and combinations thereof.

Applicant submits that this claim is free of the cited art. Ignacio et al. disclose a monitor composition and a halogen source (column 1, lines 26-27). The dyes of the Ignacio et al. compositions are “susceptible to halogenation in the presence of a halogen source and a peracid, and changes color as a result of the halogenation to provide a distinct color change in the monitor composition” (column 3, lines 10-13). Claim 23 does not require a halogen source. Further, neither Malchesky et al., Bealing et al., nor Barrett disclose the colorants recited in claim 23.

### **Summary**

It is respectfully submitted that the pending claims 1-21 and 23 are in condition for allowance and notification to that effect is respectfully requested.

Serial No.: 09/453,726

Filed: 2 December 1999

For: HYDROGEN PEROXIDE INDICATOR AND METHOD

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The Examiner is invited to contact Applicant's Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for

David M. READ

By

Muetting, Raasch & Gebhardt, P.A.

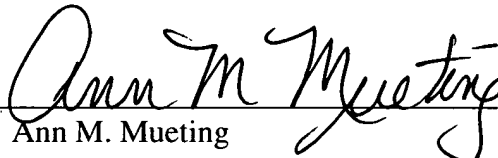
P.O. Box 581415

Minneapolis, MN 55458-1415

Phone: (612) 305-1220

Facsimile: (612) 305-1228

May 27, 2003  
Date

By:   
Ann M. Muetting  
Reg. No. 33,977  
Direct Dial (612)305-1217

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**APPENDIX A - SPECIFICATION/CLAIM AMENDMENTS  
INCLUDING NOTATIONS TO INDICATE CHANGES MADE**

**Serial No.: 09/453,726**

**Docket No.: 52951US002**

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Amendments to the following are indicated by underlining what has been added and bracketing what has been deleted. Additionally, all amendments have been marked in bold typeface.

**In the Specification**

The paragraph at page 2, line 3, has been amended as follows:

The present invention provides a hydrogen peroxide indicator that includes a substrate and an indicator composition disposed thereon, wherein the indicator composition includes at least one colorant selected from the group consisting of Malachite green oxalate, Crystal violet, Methyl violet 2B, Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, [Thionine,] **Thionin**, Meldolas blue, Methylene green, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, Bromopyrogallol red, and combinations thereof.

The paragraph at page 2, line 17, has been amended as follows:

Preferably, the colorant is selected from the group consisting of Ethyl violet, New fuchsin, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1,

Brilliant blue R, Quinea green B, [Thionine,] Thionin, Meldolas blue, Methylene green, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Mordant red 19, Bromopyrogallol red, and combinations thereof.

The paragraph at page 2, line 28, has been amended as follows:

In a preferred embodiment the present invention provides a hydrogen peroxide indicator that includes a substrate and an indicator composition disposed thereon, wherein the indicator composition includes a binder, at least one colorant selected from the group consisting of Malachite green oxalate, Crystal violet, Methyl violet 2B, Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, [Thionine,] Thionin, Meldolas blue, Methylene green, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, Bromopyrogallol red, and combinations thereof, and at least one colorant that does not change color upon contact with hydrogen peroxide vapor.

The paragraph at page 4, line 23, has been amended as follows:

Suitable colorants for use in the indicator compositions of the present invention include the following: Malachite green oxalate, Crystal violet, Methyl violet 2B, Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, [Thionine,] <sup>✓</sup>Thionin, Meldolas blue, Methylene green, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, and Bromopyrogallol red. Alternative names and Color Index Numbers for these colorants are listed in Tables 1 and 2 below. Various combinations of these colorants can be used in the indicator compositions of the present invention. Such mixtures or blends would increase the options available in color changes dramatically.

The paragraph at page 5, line 8, has been amended as follows:

A preferred group of colorants include the following: Ethyl violet, New fuchsin, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Quinea green B, [Thionine,] <sup>✓</sup>Thionin, Meldolas blue, Methylene green, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29,

Serial No.: 09/453,726

Filed: 2 December 1999

For: HYDROGEN PEROXIDE INDICATOR AND METHOD

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Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Mordant red 19, Bromopyrogallol red, and combinations thereof.

The paragraph at page 5, line 18, has been amended as follows:

Another preferred group of colorants include the following: Malachite green oxalate, Methyl violet 2B, New fuchsin, Toluidine blue O, Luxol brilliant green BL, Quinea green B, [Thionine,] Thionin, Meldolas blue, Lissamine green B, Alkali blue 6B, Brilliant green, Victoria green S extra, Eriochrome blue black B, Congo red, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Bromopyrogallol red, and combinations thereof.

The paragraph at page 5, line 24, has been amended as follows:

Suitable colorants become colorless or change to a different color upon exposure to hydrogen peroxide vapor. Preferred are those colorants that show good contrast between the initial color and the color after exposure to hydrogen peroxide vapor. Examples include, Malachite green oxalate, Methyl violet 2B, New fuchsin, Quinea green B, [Thionine,] Thionin, Meldolas blue, Lissamine green B, Alkali blue 6B, Congo red, Eriochrome blue black B, Bismarck brown R, Methylene violet 3RAX, and combinations thereof.

The table at page 13, row 5, has been amended as follows:

Serial No.: 09/453,726

Filed: 2 December 1999

For: HYDROGEN PEROXIDE INDICATOR AND METHOD

10	<sup>1</sup> Disperse blue 1 ( <i>Solvent blue 18</i> or <i>Celliton blue</i> <i>extra</i> )	Anthraquinone	46500	Royal Blue	More gray	Dark gray blue
11	<sup>1</sup> Brilliant blue R ( <i>Acid blue 83</i> or <i>Coomassie</i> <i>brilliant blue R</i> )	Methane	42660	Blue	No Change	Lighter
12	<sup>1</sup> Victoria blue R ( <i>Basic blue 11</i> )	Methane	44040	Royal blue	Slightly Lighter	Lighter
13	<sup>1</sup> Quinea green B ( <i>Acid green 3</i> )	Methane	42085	Green	Pale green	Very pale green
14	<sup>1</sup> [Thionine] <u>Thionin</u> ( <i>Lauth's violet</i> )	Thiazine	52000	Blue	No Change	Light gray
15	<sup>1</sup> Meldolas blue	Oxazine	51175	Dark lilac	Slightly Lighter	Pale beige
16	<sup>1</sup> Methylene green	Thiazine	52020	Light blue	None	Very Pale blue

The paragraph at page 15, line 1, has been amended as follows:

Colorants that showed good contrast between the initial color and the color after exposure to hydrogen peroxide vapor are Malachite green oxalate, Methyl violet 2B, New fuchsin, Quinea green B, [Thionine,] Thionin<sup>✓</sup>, Meldolas blue, Lissamine green B, and Alkali blue 6B.

### In the Claims

For convenience, all pending claims are shown below.

1. (AMENDED) A hydrogen peroxide sterilization indicator comprising a substrate and an indicator composition disposed thereon, wherein the indicator composition comprises at least one colorant selected from the group consisting of [**Malachite green oxalate, Crystal violet, Methyl violet 2B,**] Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, [**Thionine,**] Meldolas blue, [**Methylene green,**] Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, Bromopyrogallol red, and combinations thereof[;

**wherein the indicator composition does not include a halogen source].**

2. (AMENDED) The hydrogen peroxide sterilization indicator of claim 1, wherein the colorant is selected from the group consisting of [**Malachite green oxalate, Methyl violet 2B,**] New fuchsin, Toluidine blue O, Luxol brilliant green BL, Quinea green B, [**Thionine,**] Meldolas blue, Lissamine green B, Alkali blue 6B, Brilliant green, Victoria green S extra, Eriochrome blue black

B, Congo red, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Bromopyrogallol red, and combinations thereof.

3. (AMENDED) The hydrogen peroxide sterilization indicator of claim 2, wherein the colorant is selected from the group consisting of [**Malachite green oxalate, Methyl violet 2B,**] New fuchsin, Quinea green B, [**Thionine,**] Meldolas blue, Lissamine green B, Alkali blue 6B, Congo red, Eriochrome blue black B, Bismarck brown R, Methylene violet 3RAX, and combinations thereof.

4. The hydrogen peroxide sterilization indicator of claim 2, wherein the colorant is selected from the group consisting of Toluidine blue O, Luxol brilliant green BL Victoria green S extra, Methylene violet, Bromopyrogallol red, Brilliant green, and combinations thereof.

5. (AMENDED) The hydrogen peroxide sterilization indicator of claim 1, wherein the colorant is selected from the group consisting of Ethyl violet, New fuchsin, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Quinea green B, [**Thionine,**] Meldolas blue, [**Methylene green,**] Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Mordant red 19, Bromopyrogallol red, and combinations thereof.

6. The hydrogen peroxide sterilization indicator of claim 1, wherein the indicator composition further comprises at least one colorant that does not change color upon contact with hydrogen peroxide vapor.

7. The hydrogen peroxide sterilization indicator of claim 6, wherein the colorant that does not change color upon contact with hydrogen peroxide vapor is selected from the group consisting of Quinacridone red 19, Auramine O, Brilliant blue G, Acid black 24, Patent blue violet, Disperse red 13, Sudan black B, Janus green B, Acridine orange base, Fast green FCF, Patent blue VF, Acid red 97, Sulforhodamine B, Xylenol orange sodium salt, Azure B, Spirit soluble fast yellow G, Keystone soap fluoro green, Calco oil blue N, Oil blue A, Calco oil green, D & C red no. 33, D & C green no.5, Bordeaux R, Xylenol cyanole FF, Crystal scarlet, Basic blue 41, Evans blue, Chicago sky blue 6B, Acid blue 113, Acid blue 120, Acid red 88, Acid red 151, Acid violet 5, Disperse red 1, Direct red 81, Disperse red 19, Sudan red 7B, Basic red 73, Acid green AX986, and combinations thereof.

8. The hydrogen peroxide sterilization indicator of claim 7, wherein the indicator composition comprises Alkali blue 6B and Quinacridone red 19.

9. The hydrogen peroxide sterilization indicator of claim 1, wherein the substrate is a polyester film.

10. (AMENDED) A hydrogen peroxide sterilization indicator comprising a substrate and an indicator composition disposed thereon, wherein the indicator composition comprises a binder, at least one colorant selected from the group consisting of [**Malachite green oxalate, Crystal violet, Methyl violet 2B,**] Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, [**Thionine,**] Meldolas blue, [**Methylene green,**] Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo



Serial No.: 09/453,726

Filed: 2 December 1999

For: HYDROGEN PEROXIDE INDICATOR AND METHOD

1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, Bromopyrogallol red, and combinations thereof, and at least one colorant that does not change color upon contact with hydrogen peroxide vapor[;

wherein the indicator composition does not include a halogen source].

*New limitation* 11. (AMENDED) A method of monitoring a hydrogen peroxide sterilization process, the method comprising exposing an article to be sterilized and [the] a hydrogen peroxide sterilization indicator [of claim 1] to a sterilant vapor consisting essentially of hydrogen peroxide [vapor], *New limitation* wherein the hydrogen peroxide sterilization indicator comprises a substrate and an indicator composition disposed thereon, wherein the indicator composition comprises at least one colorant selected from the group consisting of Malachite green oxalate, Crystal violet, Methyl violet 2B, Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, Thionin, Meldolas blue, Methylene green, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASE, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, Bromopyrogallol red, and combinations thereof.

12. (AMENDED) The method of claim 11, wherein the colorant is selected from the group consisting of Malachite green oxalate, Methyl violet 2B, New fuchsin, Toluidine blue O, Luxol brilliant green BL, Quinea green B, [Thionine] Thionin, Meldolas blue, Lissamine green B, Alkali blue 6B, Brilliant green, Victoria green S extra, Eriochrome blue black B, Congo red,

Bismarck brown R, Methylene violet, Methylene violet 3RAX, Bromopyrogallol red, and combinations thereof.

13. (AMENDED) The method of claim 12, wherein the colorant is selected from the group consisting of Malachite green oxalate, Methyl violet 2B, New fuchsin, Quinea green B, **[Thionine] Thionin**, Meldolas blue, Lissamine green B, Alkali blue 6B, Congo red, Eriochrome blue black B, Bismarck brown R, Methylene violet 3RAX, and combinations thereof.

14. The method of claim 12, wherein the colorant is selected from the group consisting of Toluidine blue O, Luxol brilliant green BL, Victoria green S extra, Methylene violet, Bromopyrogallol red, Brilliant green, and combinations thereof.

15. (AMENDED) The method of claim 11, wherein the colorant is selected from the group consisting of Ethyl violet, New fuchsin, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Quinea green B, **[Thionine] Thionin**, Meldolas blue, Methylene green, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Mordant red 19, Bromopyrogallol red, and combinations thereof.

16. The method of claim 11, wherein the indicator composition further comprises at least one colorant that does not change upon contact with hydrogen peroxide vapor.

17. The method of claim 16, wherein the colorant that does not change color upon contact with hydrogen peroxide vapor is selected from the group consisting of Quinacridone red

19, Auramine O, Brilliant blue G, Acid black 24, Patent blue violet, Disperse red 13, Sudan black B, Janus green B, Acridine orange base, Fast green FCF, Patent blue VF, Acid red 97, Sulforhodamine B, Xylenol orange sodium salt, Azure B, Spirit soluble fast yellow G, Keystone soap fluoro green, Calco oil blue N, Oil blue A, Calco oil green, D & C red no. 33, D & C green no.5, Bordeaux R, Xylenol cyanole FF, Crystal scarlet, Basic blue 41, Evans blue, Chicago sky blue 6B, Acid blue 113, Acid blue 120, Acid red 88, Acid red 151, Acid violet 5, Disperse red 1, Direct red 81, Disperse red 19, Sudan red 7B, Basic red 073, Acid green AX986, and combinations thereof.

18. The method of claim 17, wherein the indicator composition comprises Alkali blue 6B and Quinacridone red 19.

19. The method of claim 11, wherein the substrate is a polyester film.

20. The method of claim 11, wherein the binder is shellac.

21. (AMENDED) The hydrogen peroxide sterilization indicator of claim 1, wherein the colorant is selected from the group consisting of [of **Malachite green oxalate**, **Methyl violet 2B**,] Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, [**Thionine**,] Meldolas blue, [**Methylene green**,] Lissamine green B, Alkali blue 6B, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, Bromopyrogallol red, and combinations thereof.

22. CANCEL

*New limitations* → 23. (NEW) A hydrogen peroxide sterilization indicator comprising a substrate and an indicator composition disposed thereon, wherein the indicator composition consists essentially of a binder, an optional colorant that does not change color upon contact with hydrogen peroxide, an optional dispersing agent, an optional opacifying agent, an optional surfactant, an optional plasticizer, an optional antifoam agent, an optional basic material, and at least one colorant selected from the group consisting of Malachite green oxalate, Ethyl violet, New fuchsin, Victoria blue B, Victoria pure blue BO, Toluidine blue O, Luxol brilliant green BL, Disperse blue 1, Brilliant blue R, Victoria blue R, Quinea green B, Thionin, Meldolas blue, Lissamine green B, Alkali blue 6B, Brilliant green, Spirit soluble HLK BASF, Victoria green S extra, Acid violet 17, Eriochrome black T, Eriochrome blue black B, D & C green no. 2, Spirit soluble fast RR, Spirit soluble fast red 3B, D & C red no. 22, Nitro red, Congo red, Brilliant cresyl blue ALD, Arsenazo 1, Basic red 29, Bismarck brown R, Methylene violet, Methylene violet 3RAX, Mordant brown 1, Reactive black 5, Mordant brown 48, Acid brown AX987, Acid violet AX990, Basic red 15, Mordant red 19, Bromopyrogallol red, and combinations thereof.



## EXHIBIT A



## Listing of Dyes at Abbey Color

**Dyes for critical industrial, medical, and military applications.** This is a partial list of the dyes available at Abbey Color. You may sort the list by clicking on the column heading, the list will be re-sorted by that column and re-drawn.

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[About Us](#)  
[Contact Us](#)  
[Driving Directions](#)

[Abbey Color](#)  
[Dye Capabilities](#)  
[Dyes for Plastics](#)  
[Eosin Dye](#)  
[Table of Dyes](#)

[Abbey Products](#)  
[Gas Leak Detection](#)  
[Gas Leak Sealant](#)  
[Concrete Repair](#)

[Abbey Concepts](#)

Abbey Product Code	Dye Type	Dye Name	Color Index	Trade Name	CAS Number	CI Number
10	Acid	Black	10	ABCOL Black 10 BR-126%	1064-48-8	20470
20	Acid	Black	2	ABCOL Nigrosine O2P	8005-03-6	50420
90	Acid	Black	24	ABCOL Milling Black 2 BNS	3071-73-6	26370
100	Acid	Black	52	ABCOL Black WA	5610-64-0	15711
1010	Direct	Black	19	ABCOL Black G	6428-31-5	35255
1080	Direct	Black	165	ABCOL Diazo Black BH-NB-125%	TOSCA #13617	None
1150	Direct	Black	170	ABCOL Black AN-NB-HC	NJ-TSRN-18881400-6003P	None
2510	Mordant	Black	11	ABCOL Chrome Black T N	1787-61-7	14645
2530	Mordant	Black	17	ABCOL Chrome Navy RZN	1787-61-7	15705
4020	Natural	Black	1	ABCOL Hematine LG	475-25-2	75290
4030	Natural	Black	1	ABCOL Hematine-HCK S	475-25-2	75290
4050	Natural	Black	1	ABCOL Hematoxylin-Certified	517-28-2	75290
5010	Solvent	Black	3	ABCOL Black X 60	4197-25-5	26150
5040	Solvent	Black	5	ABCOL Spirit Nogrosine SBDS	11099-03-9	50415
5061	Solvent	Black	7	ABCOL Nigrosine Z1630	8005-02-5	50415:1
5550	Acid	Blue	1	ABCOL Patent Blue VF	129-17-9	42045
5560	Acid	Blue	7	ABCOL Patent Blue A Conc	3486-30-4	42080
5570	Acid	Blue	9	ABCOL Blue NB	3844-45-9	42090
5600	Acid	Blue	20	ABCOL Induline Blue B X	8004-99-7	50405
5650	Acid	Blue	25	ABCOL Brilliant Blue RB	6408-78-2	62055
5660	Acid	Blue	27	ABCOL Alizarine Blue B	6408-51-1	61530
5670	Acid	Blue	29	ABCOL Blue G	5850-35-1	20460
5680	Acid	Blue	34	ABCOL Blue GOV	6460-05-5	42561
5720	Acid	Blue	281	ABCOL Blue GLF	Proprietary	None
5730	Acid	Blue	80	ABCOL Brilliant Blue RAWL	4474-24-2	61585
5750	Acid	Blue	90	ABCOL Brilliant Cyanine Blue G	6104-58-1	42655
6005	Basic	Blue	1	ABCOL Blue 6G	3251-06-0	42025
6030	Basic	Blue	7	ABCOL Victoria Blue BO	2390-60-5	42595
6050	Basic	Blue	9	ABCOL Methylene Blue 2B	61-73-4	52015
6060	Basic	Blue	9	ABCOL Methylene Blue 2B Zn Free	61-73-4	52015
6070	Basic	Blue	26	ABCOL Victoria Blue BX	2580-56-5	44045

Valid 11/1999 - 01/2000

Sigma Chemical Co.  
P.O. Box 14508  
St. Louis, MO 63178 USA  
Tel: 314-771-5765

## EXHIBIT B

### M A T E R I A L   S A F E T Y   D A T A   S H E E T

#### SECTION 1. - - - - - CHEMICAL IDENTIFICATION- - - - -

CATALOG #: A2931  
NAME: ALKALI BLUE 6B FREE ACID

#### SECTION 2. - - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - -

CAS #: 1324-76-1  
MF: C37H29N3O3S  
EC NO: 215-385-2

#### SECTION 3. - - - - - HAZARDS IDENTIFICATION - - - - -

##### LABEL PRECAUTIONARY STATEMENTS

IRRITANT  
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.  
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF  
WATER AND SEEK MEDICAL ADVICE.  
WEAR SUITABLE PROTECTIVE CLOTHING.

#### SECTION 4. - - - - - FIRST-AID MEASURES- - - - -

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF  
WATER FOR AT LEAST 15 MINUTES.  
IN CASE OF CONTACT, IMMEDIATELY WASH SKIN WITH SOAP AND COPIOUS  
AMOUNTS OF WATER.  
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL  
RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.  
IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.  
CALL A PHYSICIAN.  
WASH CONTAMINATED CLOTHING BEFORE REUSE.

#### SECTION 5. - - - - - FIRE FIGHTING MEASURES - - - - -

##### EXTINGUISHING MEDIA

WATER SPRAY.  
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

##### SPECIAL FIREFIGHTING PROCEDURES

WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO  
PREVENT CONTACT WITH SKIN AND EYES.

##### UNUSUAL FIRE AND EXPLOSIONS HAZARDS

EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

#### SECTION 6. - - - - - ACCIDENTAL RELEASE MEASURES- - - - -

WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY  
RUBBER GLOVES.

SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.

AVOID RAISING DUST.

VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

#### SECTION 7. - - - - - HANDLING AND STORAGE- - - - -

REFER TO SECTION 8.

#### SECTION 8. - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION- - - - -

CHEMICAL SAFETY GOGGLES.  
RUBBER GLOVES.  
NIOSH/MSHA-APPROVED RESPIRATOR.  
SAFETY SHOWER AND EYE BATH.  
MECHANICAL EXHAUST REQUIRED.

AVOID CONTACT AND INHALATION.  
DO NOT GET IN EYES, ON SKIN, ON CLOTHING.  
WASH THOROUGHLY AFTER HANDLING.  
IRRITANT.  
KEEP TIGHTLY CLOSED.  
STORE IN A COOL DRY PLACE.

SECTION 9. - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - -  
APPEARANCE AND ODOR  
BLUE SOLID

SECTION 10. - - - - - -STABILITY AND REACTIVITY - - - - -  
INCOMPATIBILITIES  
STRONG OXIDIZING AGENTS  
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS  
TOXIC FUMES OF:  
CARBON MONOXIDE, CARBON DIOXIDE  
NITROGEN OXIDES  
SULFUR OXIDES

SECTION 11. - - - - - TOXICOLOGICAL INFORMATION - - - - -  
ACUTE EFFECTS  
MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION.  
CAUSES EYE AND SKIN IRRITATION.  
MATERIAL IS IRRITATING TO MUCOUS MEMBRANES AND UPPER  
RESPIRATORY TRACT.  
TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND  
TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

SECTION 12. - - - - - ECOLOGICAL INFORMATION - - - - -  
DATA NOT YET AVAILABLE.

SECTION 13. - - - - - DISPOSAL CONSIDERATIONS - - - - -  
DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A  
CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.  
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. - - - - - TRANSPORT INFORMATION - - - - -  
CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. - - - - - REGULATORY INFORMATION - - - - -  
EUROPEAN INFORMATION

IRRITANT  
R 36/37/38  
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.  
S 26  
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF  
WATER AND SEEK MEDICAL ADVICE.  
S 36  
WEAR SUITABLE PROTECTIVE CLOTHING.

SECTION 16. - - - - - OTHER INFORMATION- - - - -  
THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO  
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# ■ Allylurea ■

		US\$
A3,680-8	Allylurea, 95% [557-11-9] $\text{H}_2\text{C}=\text{CHCH}_2\text{NHCONH}_2$ FW 100.12 mp 84-86° <i>Beil</i> 4:209- ★ <i>Merck Index</i> 13:295 <i>FT-NMR</i> 1(1), 1308B <i>FT-IR</i> 1(1), 800D <i>Safety</i> 2, 107D <i>R&amp;S</i> 1(1), 939M <i>RTECS</i> YR7875000	25g 21.20 100g 58.50 250g 128.60
19,814-5	Alphazurine A [3486-30-4] (Acid Blue 7, C.I. 42080, Patent Blue A) FW 690.82 ★ mp 290° (dec.) $\lambda_{\text{max}}$ 637(409)nm <i>Beil</i> 14,856 <i>FT-IR</i> 1(2), 1031A <i>Safety</i> 2, 108B <i>R&amp;S</i> 1(2), 2779L <i>UV-Vis</i> 87 <i>RTECS</i> DA4427950 Dye content ~60%	25g 29.40 100g 63.90
	Alphazurine FG, see 86,114-6, Erioglaucine page 820	
25,149-6	R-Alpine-Boramine™ [67826-92-0] [N,N'-bis(monoisopinocampheylborane)]-..... N,N,N',N'-tetramethylethylenediamine FW 416.36 mp 143-144° <i>Safety</i> 2, 108D ★ <i>R&amp;S</i> 1(2), 3033B <b>FLAMMABLE SOLID MOISTURE-SENSITIVE</b> Chiral hydroboration reagent. <i>J. Org. Chem.</i> 1980, 45, 3543. For further references, see <i>Aldrichimica Acta</i> 1987, 20, 30. Derived from (+)- $\alpha$ -pinene	5g 47.30 25g 151.10
49,579-4	S-Alpine-Boramine™ [68297-74-5] [N,N'-bis(monoisopinocampheylborane)]-..... N,N,N',N'-tetramethylethylenediamine FW 416.36 mp 144-146° <b>FLAMMABLE SOLID MOISTURE-SENSITIVE</b> Chiral hydroboration reagent. <i>J. Org. Chem.</i> 1980, 45, 3543. For further references, see <i>Aldrichimica Acta</i> 1987, 20, 30.	5g 38.10 25g 126.60
41,720-3	R-Alpine-Borane®, 97% [73624-47-2] (B-isopinocampheyl-9-..... borabicyclo[3.3.1]nonane) FW 258.26 bp >55° d 0.947 [ $\alpha$ ] <sub>D</sub> <sup>25</sup> -22° (c=12, THF) <b>PYROPHORIC</b> Derived from (+)- $\alpha$ -pinene	25mL 203.60
23,273-4	R-Alpine-Borane® [73624-47-2] (B-isopinocampheyl-9-borabicyclo[3.3.1]..... nonane, 0.5M solution in tetrahydrofuran) FW 258.26 d 0.896 Fp 1°F(-17°C) [ $\alpha$ ] <sub>D</sub> <sup>25</sup> -3.0° (neat) <i>Fieser</i> 8,403 10,320 11,429 <i>Safety</i> 2, 109A <b>FLAMMABLE LIQUID</b> <b>IRRITANT</b> R- and S-Alpine-Boranes are used for asymmetric reduction of aldehydes <sup>1,3</sup> and prochiral ketones <sup>2,3</sup> (1) <i>Synlett</i> 1993, 561. (2) <i>Tetrahedron: Asymmetry</i> 1994, 5, 1061, 1075. <i>Aldrichimica Acta</i> 1987, 20, 30. (3) <i>ibid.</i> 1982, 15, 68. Derived from (+)- $\alpha$ -pinene (Packaged under nitrogen in Sure/Seal™ bottles)	100mL 67.90 800mL 293.40
41,704-1	S-Alpine-Borane®, 97% [42371-63-1] (B-isopinocampheyl-9-..... borabicyclo[3.3.1]nonane) FW 258.26 bp >55° d 0.947 [ $\alpha$ ] <sub>D</sub> <sup>25</sup> +20° (c=12, THF) <b>PYROPHORIC</b> Derived from (-)- $\alpha$ -pinene	25mL 220.30
23,770-1	S-Alpine-Borane® [42371-63-1] (B-isopinocampheyl-9-borabicyclo[3.3.1]..... nonane, 0.5M solution in tetrahydrofuran) FW 258.26 d 0.897 Fp 1°F(-17°C) [ $\alpha$ ] <sub>D</sub> <sup>25</sup> +1.2° (neat) <i>Fieser</i> 8,403 11,429 <i>Safety</i> 2, 109B <b>FLAMMABLE LIQUID</b> See 23,273-4 above. Derived from (-)- $\alpha$ -pinene (Packaged under nitrogen in Sure/Seal™ bottles)	100mL 68.00 800mL 294.90
22,902-4	R-Alpine-Hydride® [64081-12-5] (lithium B-isopinocampheyl-9-bora-..... bicyclo[3.3.1]nonyl hydride, 0.5M solution in tetrahydrofuran) FW 266.21 d 0.919 Fp 1°F(-17°C) [ $\alpha$ ] <sub>D</sub> <sup>25</sup> -5.6° (neat) <i>Fieser</i> 8,303 <i>Safety</i> 2, 109C <b>FLAMMABLE LIQUID MOISTURE-SENSITIVE</b> (Packaged under nitrogen in Sure/Seal™ bottles)	100mL 61.20
23,772-8	S-Alpine-Hydride® [100013-07-8] (lithium B-isopinocampheyl-9-bora-..... bicyclo[3.3.1]nonyl hydride, 0.5M solution in tetrahydrofuran) FW 266.21 d 0.920 Fp 1°F(-17°C) [ $\alpha$ ] <sub>D</sub> <sup>25</sup> +5.5° (neat) <i>Fieser</i> 8,303 <i>Safety</i> 2, 109D <b>FLAMMABLE LIQUID MOISTURE-SENSITIVE</b> (Packaged under nitrogen in Sure/Seal™ bottles)	100mL 68.10
	ALTRETAMINE, see 54,983-5, 2,4,6-Tris(dimethylamino)-1,3,5-triazine page 1887 Alum, see Aluminum potassium sulfate dodecahydrate	

47,739-7	Alumatrat FW 692.6 May conta licensed
23,404-4	Alum Car
51,774-7	Alumina, ★ <i>Merck in Average</i>
51,775-5	Alumina, ★ <i>Merck in Average</i>
A3,688-3	Alumino ★ FW 473. <i>FT-IR</i> 1( Reagent May con Ignitor Sensiti
45,403-6	Aluminc ★ May cor
54,104-4	Alumin ★ <i>Merck</i>
42,480-3	Alumin ★ d 2.70C
43,370-5	Alumin ★ [7429- Weight
43,371-3	Alumir ★ Al Weigh
51,857-3	Alumi ★
51,858-1	Alumi ★ <i>RTEC</i>
26,659-0	Alumi ★ 13.6g
26,695-7	Alumi ★ 6.8g=
26,657-4	Alum ★ 3.4g=
32,685-2	Alum ★ 1.7g=
26,658-2	Alur ★ 6.8g
32,686-0	Alun ★ 900i
35,685-9	Alun ★ 3.1g
32,692-5	Alur ★
51,860-3	Alur ★ Me

